Easy DIY Game Table

This document describes how to build an attractive and durable game table out of t-slot extruded aluminum. The gaming mat merges seamlessly under the frame, giving the table a sleek look. The outer slots hold accessories such as cup holders and removable shelves, and the vault has a rubber bumper around the inside. It's rock solid and doesn't wobble.

The pictured table is 4'4"x6'4", with a 3" armrest and a 1.5"-deep vault. You can make your table whatever size you like.

Despite its quality, the table is easy to build. No woodworking skills are needed. It can be assembled in a day.

Your cost will depend on the size of your table. Excluding shipping, the pictured table is $1,405, including the neoprene gaming mat. With a few compromises, you can bring the cost down to $820. The 3.5'x4' version is as low as $650. Accessories range from $4.50 for a cup holder to $29 for a large shelf.

Alternatives. You can find other 4'x6' game tables from these sellers:

- *Game Toppers* (https://gametoppersllc.com/): $1,328 with legs add-on (but a bit wobbly); includes gaming mat; doesn't include shipping
- *Box King* (https://boxkinggaming.com): $1,549; includes shipping; doesn't include gaming mat
- *Wyrmwood* (https://wyrmwoodgaming.com/): $2,880; includes wooden topper; doesn't include shipping or gaming mat

Buyer beware: their accessories can be *extremely* expensive.

Contents

License and Disclaimer

The Easy DIY Game Table was inspired by The Game Garage's portable game table. See their video here: https://www.youtube.com/watch?v=etzGon_lGlw.

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I'm providing this document as a gift to the community. I don't charge for it, and I don't use affiliate links or get any other kick-backs from it.

Important: I have no other experience designing tables. The one I built seems very sturdy, but I've made some changes for this document. The design could also have hidden flaws that cause it to collapse or cause injury. **Build the table at your own risk.**

Be sure to read and understand all the instructions before placing any orders. Double-check your parts order against the design, particularly the machining instructions. I wrote this document after building my table, so I haven't been able to test the instructions, and it's possible I made some mistakes. **You are responsible for all costs associated with building the game table, including costs incurred by mistaken parts orders, even if the mistake is in this document!**

Feedback

This is v1.0, released February 24th, 2026. Download it from https://www.jamesshore.com/v2/projects/easy-diy-game-table.

Your comments are welcome! Please reference the above version number and share your thoughts in this EN World thread: https://www.enworld.org/threads/716534/

Plans

The default table is 76" long, 52" wide, and 29.1875" high. The surrounding frame is 3" wide and 1.5" tall, so the interior playing surface is 70" long, 46" wide, and 27.6875" high. These dimensions are all easy to change.

The playing surface consists of 1/2" plywood topped with a 5mm neoprene mat. It's suspended under the table frame and clamped into place with two support rails and six end support plates. The frame overlaps the plywood and neoprene by 1" on each side, which results in a sleek, uninterrupted border between the frame and playing surface.

The aluminum has slots on each side. On the top of the frame, they're hidden by plastic covers. On the inside of the frame (inside the vault), they're covered by rubber bumpers. The rest of the slots are left open, and the slot on the outside of the frame is used to hang accessories.

Options

These instructions include two major options: a choice of colors, and a choice of aluminum providers.

Colors

The table may be built in silver, black, or "full black." This refers to the color of the aluminum.

"Silver" is normal shiny aluminum. It's cheaper than the other colors, but some of the hardware is only available in black, particularly the end caps and interior bumpers. Some people might find the contrast jarring. Or it might be a nice accent. You decide.

"Black" is anodized aluminum with a matte black color. The anodization is only surface-level, so the shiny silver aluminum color shines through where the aluminum has been cut or scratched. This means that the joins in the table are more visible than some might prefer. Scratches will also be very visible, although the aluminum doesn't scratch as easily as wood does.

"Full Black" uses aluminum that's black all the way through. Although it's more expensive, it hides joins and scratches better than normal aluminum.

Budget Aluminum

You can save a lot of money if you're okay with the end caps sticking out 3/16".

Why do they stick out? Because the end caps are 3/16" deep, and the budget aluminum supplier doesn't provide machining options that account for that.

To prevent the end caps from sticking out, the rails have to be cut 6/16" shorter and machined 3/16" closer to the end of the rail—at 0.562" and 2.062" from the end. 80/20, my "standard" recommendation for aluminum supplier, provides that machining. But they're expensive.

My "budget" recommendation for aluminum supplier, TNutz, is about half the price of 80/20, but their machining is limited to 0.75" and 2.25" from the end. So you can't account for the depth of the end caps in your order, causing the end caps to stick out 3/16".

The budget aluminum is also only available in silver and black, not "full black."

Customizing the Plans

You can customize the table however you like. Go wild!

Width and Length

The default table is built around a 4'x6' plywood sheet and neoprene gaming mat. To change the size of the table, change the size of the plywood and mat.

The frame overlaps the plywood (and mat) by 1" on each side, so the interior of the table will be 2" shorter and narrower than the plywood. The exterior will be 4" longer and wider, assuming the default 3"-wide frame.

Once you decide on the dimensions of the plywood, update the length of the rails. The long frame rails should be 2" *shorter* than the *long side* of the plywood. The short frame rails should be 3.625" *longer* than the *short side* of the plywood, unless you're using budget aluminum, in which case they should be 4" longer. The support rails should be the same length as the short frame rails.

You might also need to change the number of support rails or end support plates. You can determine what kind of supports you need by buying the plywood first and putting blocks underneath it where the supports will be. Then walk around on the plywood and make sure it's sturdy.

If your long rail is 63" or less, you can use an "ultra light" profile without decreasing the amount of weight the table can hold. If you increase the length of the long frame rail past 70", the 1.5" deep standard-weight profile may not be enough, and you should consider increasing it to a 3" deep ultra-light. Similarly, if you increase the width of the plywood beyond 60", consider using standard-weight aluminum rather than ultra-light aluminum for the support rails and short frame rails.

I've provided schematics for 3.5'x4' and 3'x5' versions of the table. I haven't tested the supports for those versions, so be sure to do that yourself.

Height

By default, the interior playing surface is 27.6875" above the ground: 27.5" for the aluminum legs plus 3/16" for the end caps. To change the height of the playing surface, change the length of the aluminum legs.

The default vault is 1.5" deep, so the armrest is 29.1875" above the ground. To change the depth of the vault, change the height of the frame rails as described in the next section.

If you have an uneven floor, you might want to get adjustable feet. Be sure to decrease the length of the legs accordingly.

Vault

The default table uses rubber "tread strips" to provide a bumper around the interior of the vault (the recessed play area). You can replace those with t-slot covers for a smooth appearance, leave them open for accessories, or even tuck an LED rope light into the slot.

The default vault is 1.5" deep with a 3" wide arm rest. You can change it by changing the aluminum profile used for the four frame rails. For example, you could use a 3"x6" profile for a 3"-deep vault with a 6" arm rest.

Be cautious of using a 0.75"-deep vault. It won't support as much weight as the 1.5"-deep profiles.

If you make changes, use Series 15 aluminum, which comes in 1.5" increments. If you use a different series, you have to update all the other aluminum and hardware to match.

Schematics

3D View, Above

3D View, Below

Top View (standard aluminum)

Labels on diagram:
- 70x3x1.5" frame rail
- 3x1.5x27.5" leg
- 3x1.5x3" gusset
- 76x52" exterior
- 72x48x0.5" suspended surface
- 70x46" interior
- 51.625x3x1.5" frame rail
- 17"
- 24.5"
- 52x76" exterior
- 48x72x0.5" suspended surface
- 46x70" interior
- 51.625x3x1.5" support rail
- 6x3" end support plate
- 17"
- 22"
- 19"
- 20"
- 19"
- 3x0.1875x1.5" rail end cap
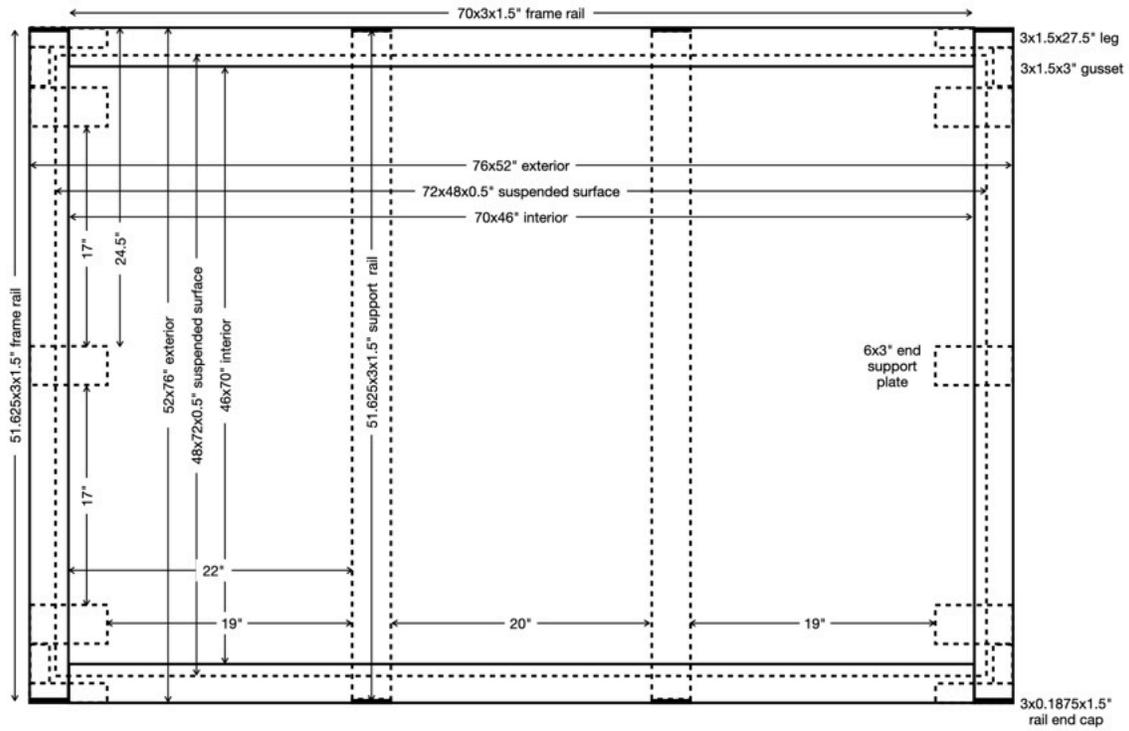
Top View (budget aluminum)

When using budget aluminum, the end caps stick out 3/16".

Labels on diagram:
- 70x3x1.5" frame rail
- 3x1.5x27.5" leg
- 3x1.5x3" gusset
- 76x52" exterior
- 72x48x0.5" suspended surface
- 70x46" interior
- 52x3x1.5" frame rail
- 17"
- 24.5"
- 52x76" exterior
- 48x72x0.5" suspended surface
- 46x70" interior
- 52x3x1.5" support rail
- 6x3" end support plate
- 17"
- 22"
- 19"
- 20"
- 19"
- 3x0.1875x1.5" rail end cap

Side View

70x1.5x3" frame rail

3x1.5x51.625" frame rail

6x3x0.25" end support plate

3x1.5x51.625" support rail

3x3x1.5" gusset

3x3x1.5" gusset

72x0.5x48" suspended surface

27.5x3x1.5" leg

27.6875" interior height

29.1875" exterior height

3x0.1875x1.5" rail end cap

Alternate Sizes

3.5'x4'

You can cut your shipping prices in half by keeping the length of the aluminum at 46" or below. This is the largest table you can build at that size. It also allows you to use a cheaper gaming mat.

3'x5'

Machining

The frame rails and support rails require machining, which will be performed by your aluminum supplier. This section describes how to place the order.

Frame Rails

The frame rails are connected with end fasteners. The fastener is screwed into the end of the long rail, and then slid into the short rail. This picture from 80/20 shows how it works:
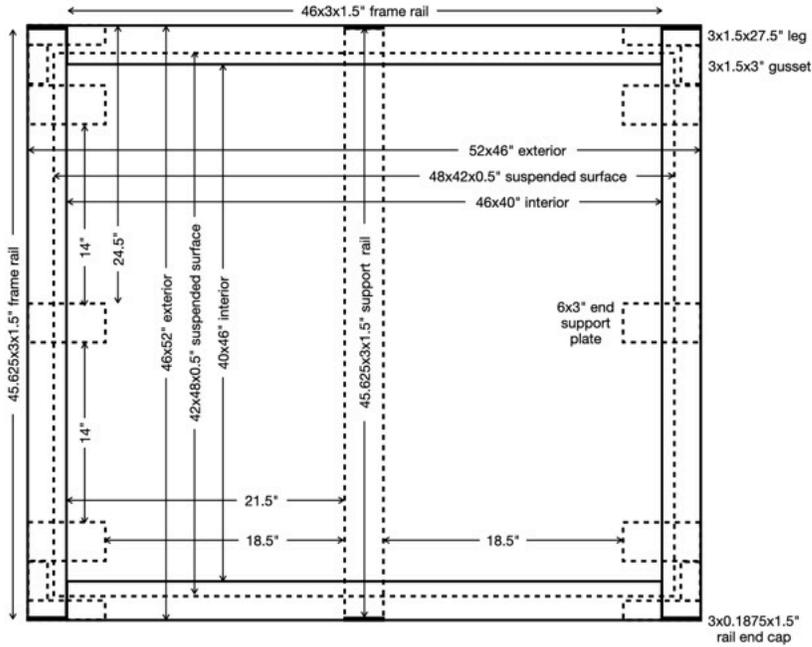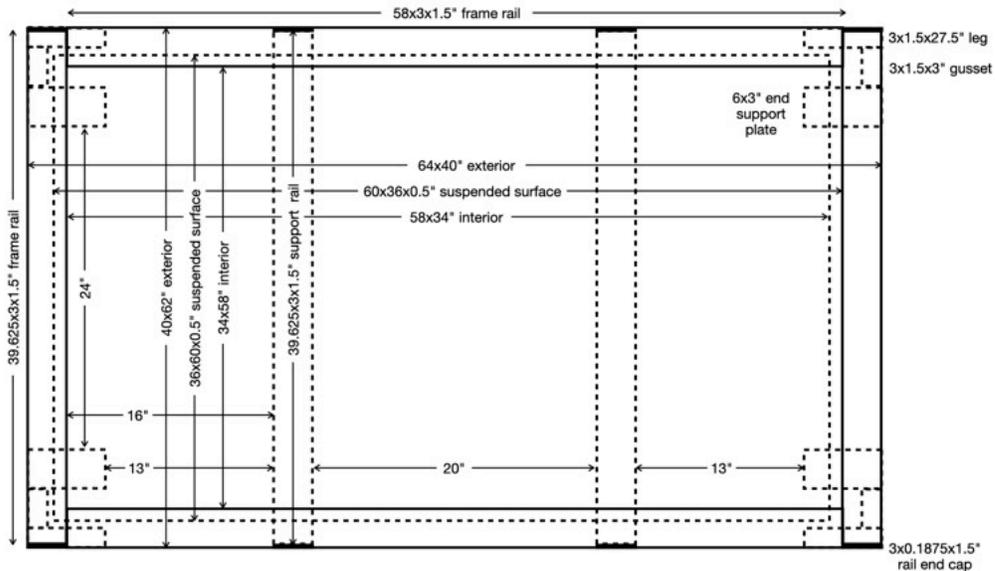

This requires two bits of machining. First, the two long frame rails each need **two hole end taps** (screw threads) at each end. The threads should be 5/16-18.

Second, the short frame rails need **access holes** at each end so you can tighten the end fasteners. Those should be placed 0.562" and 2.062" from each end of each short frame rail. They need to go through the slot on the narrow side of the rail, which is designated "T."

The budget aluminum supplier, Tnutz, can only drill access holes at 0.75" and 2.25" from the end of each short frame rail. This requires a longer rail and causes the end caps to stick out 3/16", as described in the "Budget Aluminum" section.

Frame connection (standard aluminum):

short rail

access hole

2.25"
0.75"
2.062"
0.562"

access hole

3x0.1875x1.5"
rail end cap

long rail

End tap adds screw
threads to these holes

designation "T"
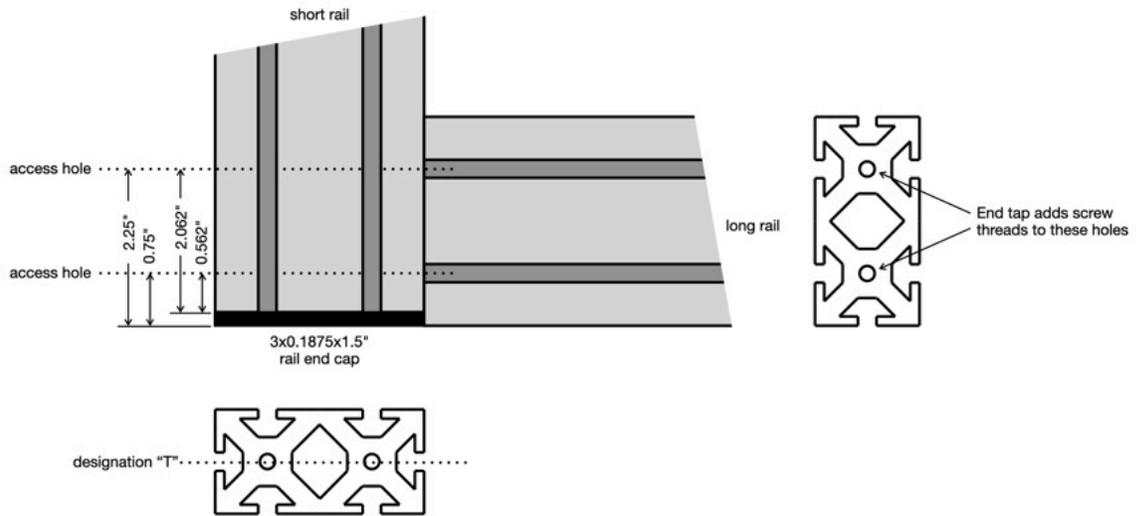
Frame connection (budget aluminum):

short rail

access hole

2.25"
0.75"

access hole

3x0.1875x1.5"
rail end cap

long rail

End tap adds screw
threads to these holes

designation "T"
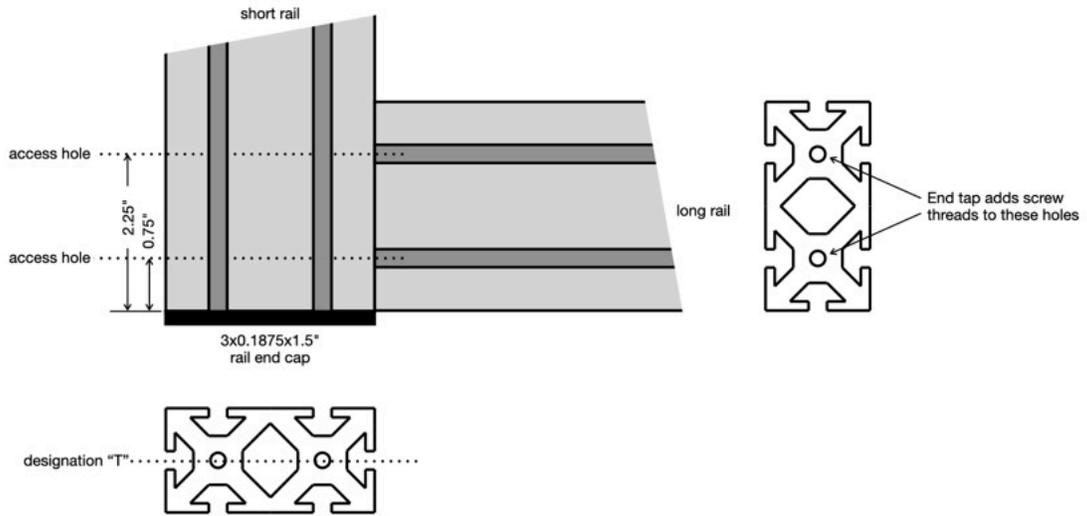
Support Rails

The support rails are held up with 5/16-18 screws that pass through the rail into a t-nut in the long frame rail. This requires **drill thru & counterbore** holes to be machined through the support rail: a hole all the way through for the screw, with a larger hole on one end for the screw head. They should be placed 0.562" from each end of each support rail, and go through the two slots in the wide side of the rail, which are designated "F" and "G." For the budget aluminum, they have to be drilled at 0.75" from the end of the rail, which will cause the end cap to stick out 3/16", as described in the "Budget Aluminum" section.

Support connection (standard aluminum):

Support connection (budget aluminum):

Parts List

Before placing any orders, go through the entire parts list, including accessories, to make a master list of the parts you need. The same supplier might be listed in multiple places. Fo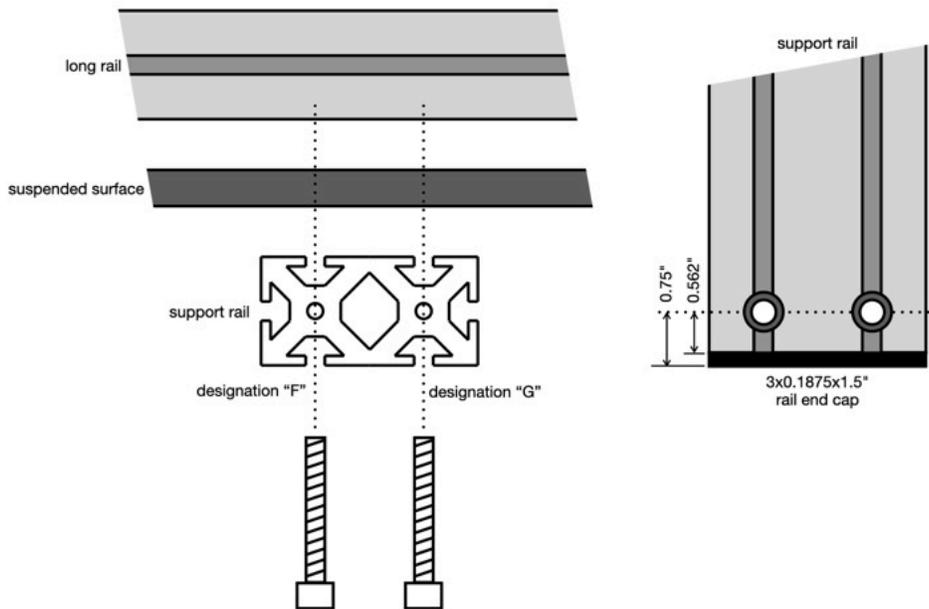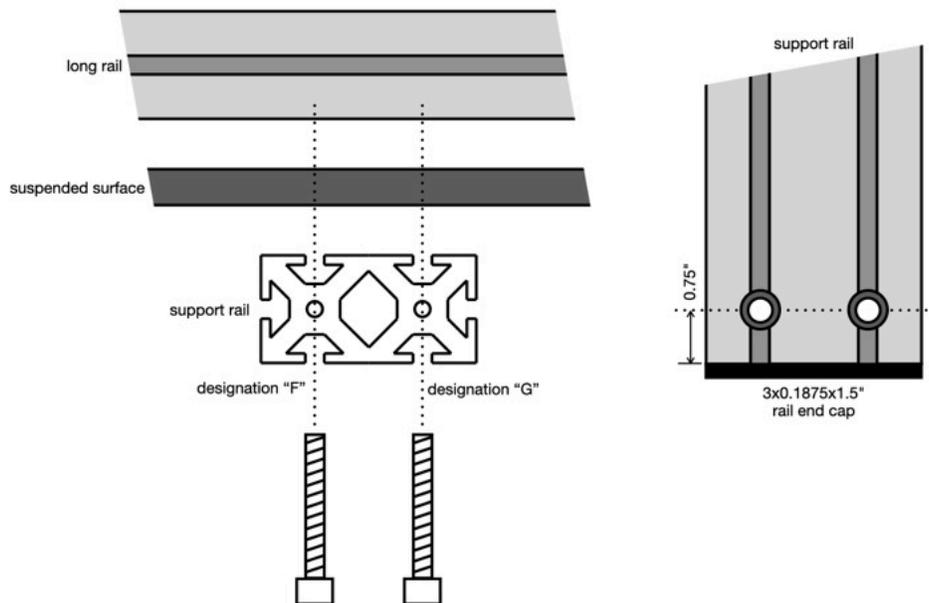r example, 80/20 is listed under both "Aluminum" and "Accessories." Combine all parts from a given supplier into a single order to save on shipping.

Cost Summary

These prices are current as of February 2026. Be sure to doublecheck all suppliers' prices, especially shipping costs, before placing your first order.

Aluminum:	Budget	Budget	Standard	Standard	Standard
Color:	Silver	Black	Silver	Black	Full Black
Aluminum	$377.96	$418.68	$820.53	$947.37	$1,065.52
Hardware	$238.17	$255.77	$238.17	$255.77	$255.77
Table Surface	$202.20	$202.20	$202.20	$202.20	$202.20
SUBTOTAL	**$818.33**	**$876.65**	**$1,260.90**	**$1,405.34**	**$1,523.49**
Shipping (approx)	$130.00	$130.00	$130.00	$130.00	$130.00
TOTAL	**$948.33**	**$1,006.65**	**$1,390.90**	**$1535.34**	**$1653.49**

There's no limit to the accessories you can build. I provide these examples:

Accessory	Cost ea.
Cup holder	**$4.53**
Small shelf	**$20.03**
Large shelf	**$29.03**
Wide shelf	**$24.04**

Here are some examples of how changing the table size affects the price:

Category	3.5'x4' (Budget Silver)	3.5'x4' (Standard Black)	3'x5' (Standard Black)	4'x6' (Standard Black)
Aluminum	$291.29	$696.21	$794.17	$947.37
Hardware	$210.53	$231.53	$224.83	$255.77
Table Surface	$136.20	$136.20	$202.20	$202.20
SUBTOTAL	**$638.02**	**$1,063.94**	**$1,221.20**	**$1,405.34**
Shipping (approx)	$60.00	$60.00	$130.00	$130.00
TOTAL	**$698.02**	**$1,123.94**	**$1,351.20**	**$1,535.34**

Tools

You'll need the following tools:

Tool	Purpose
Tape Measure	Measuring where parts should go.
Pencil	Marking where parts should go.
Thin serrated knife	Cutting t-slot covers to size. The covers are made out of tough plastic, and I found that a sawing motion with a cheap kitchen knife worked best. A hacksaw might work better, but I didn't think to try that.
Utility Knife	Cutting interior bumpers to size and cutting push-in fasteners to fit.
3/16" & 5/16" hex drivers (required); #2 phillips driver (for accessories)	Fastening screws. For hex screws, I prefer socketed ball hex bits, but you'll also need a 3/16" driver with a long narrow shaft, like the t-handle driver pictured here. I don't recommend a powered driver due to the risk of overdriving.
80 grit sanding sponge	Removing splinters from the edges of the plywood table surface. You can use a sanding block and sandpaper instead. The exact grit isn't important.

Tool	Purpose
Two or three friends	Flipping the table frame after it's been built and holding the table surface in place while you screw in its supports. Also, to play games with!
Rubber mallet (optional)	Inserting t-slot covers. You can use your thumbs instead, but the mallet makes it easier.
Scratch awl (for accessories)	Making a guide hole for drilling. You can skip this if you aren't going to make shelves.
Power drill with 9/32" and 7/64" all-purpose drill bits (for accessories)	The 9/32" bit is used to expand the cup holder holes, and the 7/64" bit is used for drilling pilot holes in the shelves.
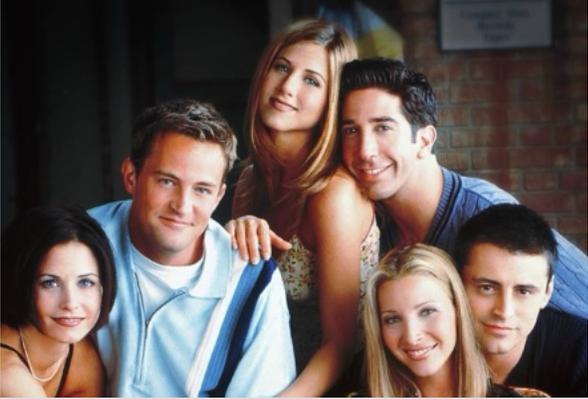
Aluminum

The majority of the table is made out of t-slot extruded aluminum. I used 80/20 parts (https://8020.net) purchased through Teco Technologies (https://tecotechnology.com). Teco was fantastic because they provide free design assistance. If you're going to customize the table, I highly recommend them.

That said, Tnutz (https://www.tnutz.com/) is a *lot* cheaper than 80/20. Their machining services are more limited, though, so the end caps will stick out a bit, as described in the "Budget Aluminum" section.

Buyer beware: Tnutz gets mixed reviews online. Most people had no problem, but some reported mistaken orders and combative customer service. In contrast, 80/20's service was excellent; they did make a mistake in my order, but they corrected it promptly and without hassle.

Important: Be sure to double-check all parts and machining instructions against the plans before ordering, particularly if you change any of the table dimensions. I try not to make mistakes, but some could have snuck in somewhere, and correctness is *your* responsibility.

Budget Silver

TNutz Part	Qty	Length (in)	Weight / in (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
EX-1530 **frame long edges** *Machining: 5/16-18 x 1.25" deep tap, each end*	2	70	0.2155	$63.70	30.2	$127.40
EX-1530UL **frame short edge** *Machining: Access Holes - Style "B," thru "T", each end*	2	52	0.1496	$37.42	15.6	$74.84

TNutz Part	Qty	Length (in)	Weight / in (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
EX-1530UL **support rail** *Machining: Drill thru & Counterbore, Style "A", thru "F" & "G", each end*	2	52	0.1496	$40.42	15.6	$80.84
EX-1530 **leg** *No machining*	4	27.5	0.2155	$23.72	23.7	$94.88
SUBTOTAL					85.0	$377.96

Budget Black

TNutz Part	Qty	Length (in)	Weight / in (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
EX-1530-Black **frame long edge** *Machining: 5/16-18 x 1.25" deep tap, each end*	2	70	0.2155	$70.50	30.2	$141.00
EX-1530UL-Black **frame short edge** *Machining: Access Holes - Style "B," thru "T", each end*	2	52	0.1496	$40.42	15.6	$80.84
EX-1530UL **support rail** *Machining: Drill thru & Counterbore, Style "A", thru "F" & "G", each end*	2	52	0.1496	$43.42	15.6	$86.84
EX-1530-Black **legs** *No machining*	4	27.5	0.2155	$27.50	23.7	$110.00
SUBTOTAL					85.0	$418.68

Standard Silver

80/20 Part	Qty	Length (in)	Weight / in (lbs)	Cost / in	Ttl weight (lbs)	Total cost
1530-S **frame long edge** *Machining: 7045 left & right*	2	70	0.1985	$1.71	27.8	$239.40
1530-ULS **frame short edge** *Machining: 7050 in T @ .562", 2.062", 49.563" & 51.063"*	2	51.625	0.135	$1.34	13.9	$138.36
1530-ULS **support rail** *Machining: 7257 in F,G @ .563" & 51.063"*	2	51.625	0.135	$1.34	13.9	$138.36

80/20 Part	Qty	Length (in)	Weight / in (lbs)	Cost / in	Ttl weight (lbs)	Total cost
1530-S leg *No machining*	4	27.5	0.1985	$1.71	21.8	$188.10
7020 cut to length	10			$3.62		$36.20
7050 access hole (for end connectors)	8			$2.87		$22.96
7045 5/16-18 two hole end tap (for end connectors)	4			$5.59		$22.36
7257 drill through and counterbore (for support rails)	8			$4.35		$34.80
SUBTOTAL					77.5	$820.53

Standard Black

80/20 Part	Qty	Length (in)	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
1530-S-Black **frame long edge** *Machining: 7045 left & right*	2	70	0.1985	$1.92	27.8	$268.80
1530-ULS-Black **frame short edge** *Machining: 7050 in T @ .562", 2.062", 49.563" & 51.063"*	2	51.625	0.135	$1.70	13.9	$175.53
1530-ULS-Black **support rail** *Machining: 7257 in F,G @ .563" & 51.063"*	2	51.625	0.135	$1.70	13.9	$175.53
1530-S-Black **leg** *No machining*	4	27.5	0.1985	$1.92	21.8	$211.20
7020 cut to length	10			$3.62		$36.20
7050 access hole (for end connectors)	8			$2.87		$22.96
7045 5/16-18 two hole end tap (for end connectors)	4			$5.59		$22.36
7257 drill through and counterbore (for support rails)	8			$4.35		$34.80
SUBTOTAL					77.5	$947.37

Standard Full Black

80/20 Part	Qty	Length (in)	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
1530-S-Black-FB **frame long edge** *Machining: 7045 left & right*	2	70	0.1985	$2.31	27.8	$323.40
1530-ULS-Black-FB **frame short edge** *Machining: 7050 in T @ .562", 2.062", 49.563" & 51.063"*	2	51.625	0.1985	$1.90	13.9	$196.18
1530-ULS-Black **support rail** *Machining: 7257 in F,G @ .563" & 51.063"*	2	51.625	0.135	$1.70	13.9	$175.53
1530-S-Black-FB **legs** *No machining*	4	27.5	0.1985	$2.31	21.8	$254.10
7020 cut to length	10			$3.62	0.0	$36.20
7050 access hole (for end connectors)	8			$2.87	0.0	$22.96
7045 5/16-18 two hole end tap (for end connectors)	4			$5.59	0.0	$22.36
7257 drill through and counterbore (for support rails)	8			$4.35	0.0	$34.80
SUBTOTAL					**77.5**	**$1,065.52**

Hardware

I've sourced hardware from Tnutz rather than 80/20 because they're much cheaper. There's some additional hardware that I got from my local hardware store's "bulk fasteners" section, and I've listed the prices I paid. If you can't get them from your hardware store, I've also provided Amazon links, but they may be more expensive.

Silver

Tnutz doesn't sell gray end caps, and 80/20's has ugly printing on them, so I've listed black end caps. If you want gray end caps instead, use part #2045GRA from 80/20.

Tnutz doesn't sell a stainless steel flanged button head socket screw (for the corner gussets), so I've listed black screws instead. If you want silver screws, you can get them from 80/20 for $38 more. Replace the Tnutz COMBO-015-B-FL (double t-nut with screws) with 16 Tnutz ETD-015-5/16-18 (double t-nut) and add 32 80/20 part #3607 (screw).

I've listed the black joining plate for the end supports, because it's much cheaper than the stainless steel version, and the silver table already has other black components. If you'd like silver-colored end supports, replace Tnutz JP-015-K-BLACK with Tnutz JP-015-K for $25 more.

I've listed black screws, because that's all my hardware store had, but you might be able to find stainless steel screws. The 2" screws for the support beams won't show. The 1.25" screws for the end supports will only show from beneath.

Tnutz Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
EC-015B end cap with push-in fasteners (for frame, support rails, and legs) 	12	0.04	$0.95	0.5	$11.40
CB-015-K corner gusset (for attaching legs to frame) 	8	0.243	$5.25	1.9	$42.00
JP-015-K-BLACK joining plate (for end supports) 	6	0.425	$7.65	2.6	$45.90
EF-015-5/16-18 standard end fastener (for screwing together frame) 	4	0.047	$0.95	0.2	$3.80
EFS-015-5/16-18 single tab end fastener (for screwing together frame without interfering with end caps) 	4	0.036	$0.85	0.1	$3.40
ETD-015-5/16-18 double t-nut (for attaching support rails and end supports to frame) 	10	0.061	$0.52	0.6	$5.20

Tnutz Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
COMBO-015-B-FL double t-nut with 5/16-18 x 5/8" flanged screws (for attaching gussets) 	16	0.1	$1.00	1.6	$16.00
EC-015-PUSH-IN push-in fastener (spares) 	3		$0.09	0.0	$0.27
COVER-015-GRY economy t-slot cover, gray (for top of frame) 	8	0.133	$1.40	1.1	$11.20
BUM-015-TS tread strip (for interior bumpers) 	20	0.09	$2.75	1.8	$55.00
SUBTOTAL				**10.4**	**$194.17**

Local Hardware Store	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
2" 5/16-18 socket head cap screw (SCHS) machine screw (for attaching support rails to frame) 	8	0.05	$0.85	0.4	$6.80

Local Hardware Store	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
1.25" 5/16-18 socket head cap screw (SCHS) machine screw (for attaching end support plates to frame)	12	0.0575	$0.80	0.7	$9.60
Stainless steel spacer, 5/16" inner diameter (minimum), 3/4" outer diameter, 1/2" length spacer (for attaching support rails and plates to frame and ensuring the support plates don't sag) These are hard to find, and were much cheaper on Amazon than at my local hardware store.	20	0.0507	$1.20	1.0	$24.00
5/16" washer (for attaching end support plates to frame)	12	0.0110	$0.30	0.1	$3.60
SUBTOTAL				**2.2**	**$44.00**

Black and Full Black

I've listed stainless steel spacers, because that's all my hardware store had, but you might be able to find black spacers. The silver spacers make an attractive accent, though. The washers are also silver, but they're only visible from beneath.

Tnutz Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
EC-015B end cap with push-in fasteners (for frame, support rails, and legs)	12	0.04	$0.95	0.5	$11.40

Tnutz Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
CB-015-K-BLACK corner gusset (for attaching legs to frame) 	8	0.243	$7.45	1.9	$59.60
JP-015-K-BLACK joining plate (for end supports) 	6	0.425	$7.65	2.6	$45.90
EF-015-5/16-18 standard end fastener (for screwing together frame) 	4	0.047	$0.95	0.2	$3.80
EFS-015-5/16-18 single tab end fastener (for screwing together frame without interfering with end caps) 	4	0.036	$0.85	0.1	$3.40
ETD-015-5/16-18 double t-nut (for attaching support rails and end supports to frame) 	10	0.061	$0.52	0.6	$5.20
COMBO-015-B-FL double t-nut with 5/16-18 x 5/8" flanged screws (for attaching gussets) 	16	0.1	$1.00	1.6	$16.00

Tnutz Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
EC-015-PUSH-IN push-in fastener (spares) 	3		$0.09	0.0	$0.27
COVER-015-BLK economy t-slot cover, black (for top of frame) 	8	0.133	$1.40	1.1	$11.20
BUM-015-TS tread strip (for interior bumpers) 	20	0.09	$2.75	1.8	$55.00
SUBTOTAL				**10.4**	**$211.77**

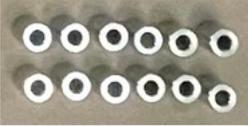| Local Hardware Store	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
2" 5/16-18 socket head cap screw (SCHS) machine screw (for attaching support rails to frame) 	8	0.05	$0.85	0.4	$6.80
1.25" 5/16-18 socket head cap screw (SCHS) machine screw (for attaching end support plates to frame) 	12	0.0575	$0.80	0.7	$9.60

Local Hardware Store	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
Stainless steel spacer, 5/16" inner diameter (minimum), 3/4" outer diameter, 1/2" length spacer (for attaching support rails and plates to frame and ensuring the support plates don't sag) These are hard to find, and were much cheaper on Amazon than at my local hardware store. 	20	0.0507	$1.20	1.0	$24.00
5/16" washer (for attaching end support plates to frame) 	12	0.0110	$0.30	0.1	$3.60
SUBTOTAL				**2.2**	**$44.00**

Table Surface

The table surface is made out of a sheet of plywood, which you'll need to get from your local lumberyard. Plywood typically comes in sheets of 4'x8'. Your supplier might be able to cut it to size for you. The cut will be pretty rough, but it won't show and you'll sand it down.

You also need a 5mm gaming mat. I got mine from Big Viking Mats (https://vikingmats.com/). They cut mats to order and offer free shipping. Box King Gaming sells cheaper "velvet" mats in 3'x5' and 4'x6' sizes (https://boxkinggaming.com/collections/premium-board-game-playmats). Reviewers say they're lower quality than a neoprene mat.

The black hockey stick tape serves to disguise the edge of the plywood, which isn't very visible to begin with. Black tape will probably work just as well on a silver table, but you can get white tape instead.

Part	Size	Weight (lbs)	Cost
1/2" Plywood 	4'x6'	29.1	$45.00
5mm Neoprene Mat 	4'x6'	4.0	$149.00

Part	Size	Weight (lbs)	Cost
Black hockey stick tape	1" wide		$8.20
SUBTOTAL	**0.0**	**33.1**	**$202.20**

Accessories

Accessories are part of the fun of a gaming table! T-slot aluminum makes them easy to add. I've provided instructions for several kinds of accessories, but feel free to make your own.

Accessories are attached with **t-nuts** or **roll-in panel mount brackets.** To save on shipping, you should order the attachment hardware at the same time as the rest of your aluminum. I suggest ordering a few more panel brackets than you think you need so you have flexibility to build more accessories in the future.

T-Nuts are used for semi-permanent accessories that you add to the table while you're building it. They slide into the t-slot from the end of a rail. (Technically, you can use "drop in" t-nuts, but they're a hassle.) The cup holders below are an example of a semi-permanent accessory.

Roll-in panel mount brackets are used for removable accessories that hook into the t-slot from the side. The shelves below are examples of removable accessories.

Cup holders

These semi-permanent cup holders collapse into compact and attractive boxes. The retaining arms are a bit finicky, but they do the job.

Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
Camco adjustable drink holder, black (from Amazon)	1	0.2401	$3.77	0.2	$3.77

Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
COMBO-015-A (from Tnutz) offset economy t-nut with screw 	2	0.041	$0.38	0.1	$0.76
SUBTOTAL				0.3	$4.53

Small shelf

This makes a great writing surface or dice tray holder. Its small size means it doesn't get in the way. It can only be mounted width-wise because the wood splits easily.

Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
Ikea APTITLIG 9.5"x6" cutting board	1	0.2888	$3.99	0.3	$3.99
2488 (from 80/20) roll-in panel mount bracket 	2	0.053	$7.13	0.1	$14.26
1/2" #10 pan-head screw It may be called a sheet metal screw 	2	0.0039	$0.29	0.0	$0.58
3/16 x 1" fender washer 	4	0.0110	$0.30	0.0	$1.20
SUBTOTAL				0.4	$20.03

Large shelf

This large surface is good for a laptop, snack bowl, character sheets, etc. It can be mounted width-wise or length-wise. If mounted length-wise, it's fairly springy.

Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
Ikea APTITLIG 17.75"x11" cutting board	1	3.2849	$12.99	3.3	$12.99
2488 (from 80/20) roll-in panel mount bracket	2	0.053	$7.13	0.1	$14.26
3/4" #10 pan-head screw It may be called a sheet metal screw	2	0.0044	$0.29	0.0	$0.58
3/16 x 1" fender washer	4	0.0110	$0.30	0.0	$1.20
SUBTOTAL				3.4	**$29.03**

Wide shelf

This shelf is shallow enough to be placed in front of a player. It can also act as a serving board on an unused side of the table. It can only be mounted width-wise.

Part	Qty	Weight ea. (lbs)	Cost ea.	Ttl weight (lbs)	Total cost
Ikea LAPPVIKEN, 23.5"x10" drawer front; "white stained oak effect" pictured	1	3.975	$8.00	4.0	$8.00
2488 (from 80/20) roll-in panel mount bracket 	2	0.053	$7.13	0.1	$14.26
3/4" #10 pan-head screw It may be called a sheet metal screw 	2	0.0044	$0.29	0.0	$0.58
3/16 x 1" fender washer 	4	0.0110	$0.30	0.0	$1.20
SUBTOTAL				4.1	$24.04

Build Instructions

1. Insert t-slot covers and bumpers

☐ Identify the long frame rails (the longest aluminum rails) and the short frame rails (the two medium-length rails that don't have large holes).

☐ For each of the four frame rails, identify the wide 3" side that's *most* attractive. This is the side that you'll put t-slot covers in. In the finished table, it will form the top of the frame.

☐ For each rail, insert a t-slot cover (80/20 part #2823) into each of the two slots on the attractive side. Make sure each cover is flush with one end of the rail. Use your rubber mallet to tap it into the slot.

☐ Use your thin serrated knife to saw off the dangling edge of the t-slot cover. Cut it flush to the end of the rail. The plastic is tough, so this will be difficult. Turn the rail over and use a sawing motion, and hold the end of the rail close to the end of your work surface.

☐ Pull the t-slot cover back out slightly and use your 80 grit sanding sponge to sand off any rough edges from your cut, then put it back in. Be careful not to damage the rail's aluminum finish.

☐ Repeat for each of the four rails.

☐ On each of the two long frame rails, identify the narrow 1.5" side that's *least* attractive. Insert the rubber tread strip into the slot on that side, making sure it's flush with one end of the rail. The rubber inserts easily, so you won't need your mallet.

☐ Turn the rail on its side and use your utility knife to cut off the end of the tread strip, flush to the end of the rail. The rubber is soft, so this will be easy.

☐ Cut off a small piece of the tread strip from the remaining supply. Hold it against the tread strip in the rail and use your pencil to trace out the arc it makes. In a moment, you'll cut along that arc so the bumpers on the long edge and short edge can meet at a flush 90° angle.

☐ Trace out the arc of the tread strip on the other end of the rail too.

☐ Remove the tread strip from the rail and use your utility knife to carve out the two arcs you traced (one from each end).

☐ Re-insert the tread strip into the rail.

☐ Repeat for the other long rail. Do *not* insert tread strips into the short rails yet.

☐ At the end of this section, you should have four frame rails. All of them should have two t-slot covers inserted on one of the wide sides. The two long rails should each have a tread strip inserted on one of the narrow sides.

2. Prepare cup holders (optional)

Skip this section if you're not adding cup holders.

☐ Attach a 9/32" drill bit to your power drill and prepare your drilling surface.

☐ For each cup holder, open the cup holder and find the three holes near the top, next to the retaining arms.

☐ Using your power drill with a 9/32" drill bit, expand the outer two holes at the top (the left and right holes, ignoring the middle hole).

☐ Find two offset economy t-nuts with bolts.

☐ Use a 3/16" hex driver to screw the bolts into the expanded holes until they start to push down on the plastic flange. If you tighten them too far, the retaining arms won't "click" into place. If they're too loose, the cup holder won't close. Error on the side of over-tightening, then loosen just until the arms click nicely.

☐ Attach a nut to each bolt, starting with them facing towards the center, and complete exactly two revolutions, ending with the nut facing towards the center again. This should be tight enough to keep the nut on the bolt, but loose enough for the cup holder to slide on the rail.

☐ Set aside. Note what the nut looks like and the depth of bolt in the nut. It may twist around before you use it again.

☐ Repeat for each cup holder.
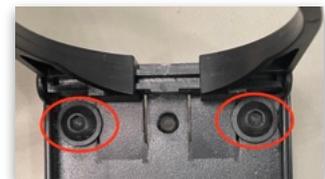
☐ At the end of this section, all of your cup holders should be prepared with two bolts and two nuts. Each cup holder should close completely. When opened, the retaining arms should open with a nice "click" and stay in place.

3. Pre-load long frame rails

☐ Place the long frame rails on the ground on a protective surface (carpet or a piece of cardboard). Turn them upside down so the t-slot covers are on the bottom and the bumpers are facing inward.

☐ On each long rail, mark the location where the support rails will attach. Use your tape measure to measure 22" from each end and use your pencil to draw a line across the entire rail. Draw another line at 25" from each end. There should be 20" between the two sets of marks. (If you changed the size of the table, adjust the location of the marks accordingly.)

☐ Locate two double t-nuts. Slide them into the outer t-slot—the one furthest from the rubber bumper on the wide side—with the protrusions facing downward. Position each t-nut so that it's inside the pencil marks. Don't worry if they slide around in subsequent steps.

☐ Repeat with the second long rail.

☐ If you have any cup holders or other semi-permanent accessories, double-check their t-nuts and slide them into the slot on the narrow side of the rail. The rail is upside down, so each cup holder should protrude up from the rail. Leave them loosely attached so they can slide around on the finished table.

☐ Locate two corner gussets. Use your 3/16" hex driver to loosely attach a double t-nut with bolts onto the sides of each gusset.

☐ For each long rail, on each side, slide a gusset into the outer t-slot—the same one as the t-nuts for the support beams—with the diagonal side facing towards the center of the rail. Don't tighten the bolts yet.

☐ At the end of this section, each long rail should have the following components loosely attached: two double t-nut for the support rails, two corner gussets, and all the cup holders and other semi-permanent accessories you plan to attach.

4. Pre-load short frame rails

☐ Place the short rails on a protective surface next to the long rails, forming a rectangle, with the t-slot covers facing down and the most attractive sides facing outward.

☐ On each short rail, mark the location where the central end support plate will attach. Use your tape measure to measure 24.5" from each end and use your pencil to draw a line across the entire rail. There should be a bit less than 3" between the two sets of marks. (If you changed the size of the table, adjust the location of the marks accordingly. There's no need to mark the location of the plates that are next to the gussets.)

☐ Locate three double t-nuts. Slide them into the outer t-slot with the protrusions facing downward. Position the middle t-nut inside the pencil marks and the other two about 5" from each end of the rail. Don't worry if they slide around in subsequent steps.

☐ Repeat with the second short rail.

☐ If you have any cup holders or other semi-permanent accessories, double-check that their t-nuts are in the correct position, then slide them into the slot on the narrow side of the rail. The rail is upside down, so each cup holder should protrude up from the rail. Leave them loosely attached so they can slide around on the finished table.

☐ For each short rail, on each side, slide a gusset into the outer t-slot—the same one as the t-nuts—with the diagonal facing towards the center of the rail. Don't tighten the bolts yet.

☐ At the end of this section, you should have all four edges of the frame in place with all the components they need loosely attached. The short edges should each have two gussets, three support plates, and any cup holders or other permanent accessories you want. The long edges should each have two gussets, two double t-nuts, and any cup holders or other permanent accessories you want. The bumpers should be facing inward and the t-slot covers should be on the bottom of each rail.

☐ It should look like this, except the support plates and end fasteners won't be attached yet.

5. Assemble frame and legs

☐ Use your 5/16" hex driver to loosely attach end fasteners to each end of each long frame rail. The standard end fastener should go on the inside, next to the bumper. The single tab end fastener should go on the outside with the tab facing towards the bumper. (This leaves room for an end cap to be added to the the short rail later.)
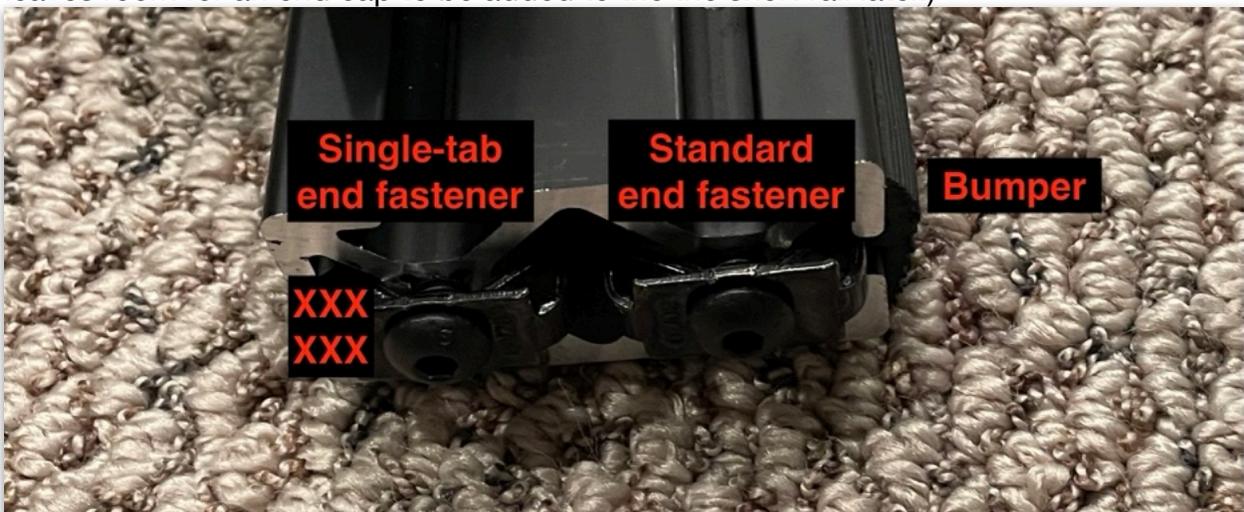
□ For one end of one long rail, tighten the end fasteners until the corresponding short rail slides into place, but without much give. Slide the short rail so that it's almost flush with the side of the long rail, with a bit of extra room for an end cap. Don't tighten the fasteners all the way yet.


□ Attach the end cap to the end of the short rail by pushing in the plastic fasteners with your thumbs or rubber mallet.

□ Adjust the position of the short rail.
If you're using standard aluminum: the *end cap* should be flush with the edge of the long rail.
If you're using budget aluminum: the *short rail* should be flush with the edge of the long rail, and the end cap will stick out a bit.

□ Repeat for the diagonally opposite corner. At this point, you should have two separate frame pieces, each with one long rail and one short rail.

□ With someone's help, tighten the remaining end fasteners just enough to connect the other ends of the rails, then slide the two corners into place simultaneously.

□ Using your 3/16" hex driver, gradually tighten the end fasteners. (The driver goes through an access hole in the short rail.) Tighten the fasteners in an "X" pattern (opposite corners), one turn at a time, so the frame trues up into a rectangle.

□ For each leg, slide the least attractive two sides into the gussets so that it's flush with the corner. Use your 3/16" hex driver to tighten the bolts.

□ Attach end caps (80/20 part #2045-Plain) to the end of the legs by pushing in the plastic fasteners with your thumbs or rubber mallet.

□ The frame should be extremely rigid and stable. If not, make sure all the end fasteners and gussets are fully tightened.

□ At the end of this section, the frame and its legs should be fully assembled, but still upside down.

6. Attach table surface

☐ Use your 80-grit sanding sponge (or equivalent) to sand off splinters and rough spots from the edges of the plywood.

☐ Apply black hockey tape to each edge of the plywood.

☐ Gather two or three friends.

☐ With their help, turn the frame over so it stands on its legs. Don't worry if the double t-nuts slide around.

☐ Center the plywood under the table frame. If the plywood has warped, position it so the ends curve up like a bowl (∪, not ∩). This will allow the support rails to force the plywood flat.

☐ Center the gaming mat on top of the plywood.

☐ Place the two support rails close by. Identify the large countersink holes (see picture), then turn the rails over so the countersink holes are on the bottom, out of view.
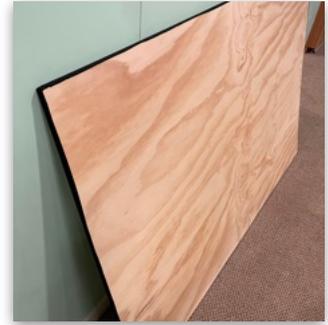
☐ Locate the double t-nuts on the long frame rails. If necessary, adjust them so they're between the pencil marks. These are where you'll attach the support rails.

☐ Make sure you have eight 2" screws and eight stainless steel spacers close at hand.

☐ Have your friends lift up the table surface (the plywood and mat) and hold it against the bottom of the frame. The surface should overlap the frame by about 1" on each side, but it doesn't need to be precise. They may find it easier if one person kneels under the plywood and pushes up against it with their back. Be careful no one hurts themselves.

☐ While your friends hold the plywood in place, have one or two of them also help you position a support rail underneath the plywood, aligned with one of the double t-nuts on the two long rails. The countersink holes should be on the bottom of the support rail.

☐ Using your 5/16" hex driver, attach the support rail to the double t-nut. From the bottom, layer: 2" screw, support rail, 1/2" stainless steel spacer, long frame rail, double t-nut. Attach the screw loosely for now.

☐ Repeat with the other side of the same support rail. If the plywood is warped, you might need a friend to push up hard on the plywood to get the screw to attach to the t-nut.

☐ Tighten the screws gradually, alternating sides until the screws are fully tightened and the spacers no longer turn freely. If the plywood is warped, you might need a friend to push up on the plywood again.
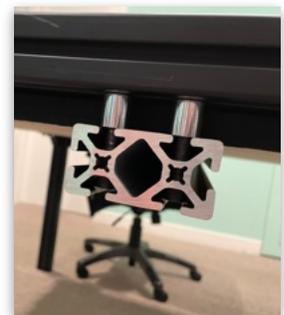
☐ Repeat with the second support rail. When you're done, the plywood should no longer need to be held up by your friends.

☐ Locate the double t-nuts on the short frame rails. If necessary, adjust them so the center t-nut is be between its pencil marks. The other two t-nuts should be next to the gussets at each end of the short rail.


☐ Using your 5/16" hex driver, attach a support plate to each double t-nut. From the bottom, layer: 1.25" screw, 5/16" washer, end support plate, 1/2" stainless steel spacer, short frame rail, double t-nut. Attach the screw loosely for now. The plate will droop down until it's tightened.

☐ Adjust the plates on the ends so they're right next to their gusset.

☐ Tighten each plate, starting with the center plate on each rail. Alternate between the two screws as you tighten each plate. As you tighten the screws, the plate will lift into place. Make sure the screws are tightened all the way and the bushings no longer turn freely. You might need a friend to push up hard on the plywood for the final turns of the screw.

☐ At the end of this section, the table will be fully constructed, with just a few cosmetic touches left to take care of. The support rails still need end caps and the short rails need their bumpers.
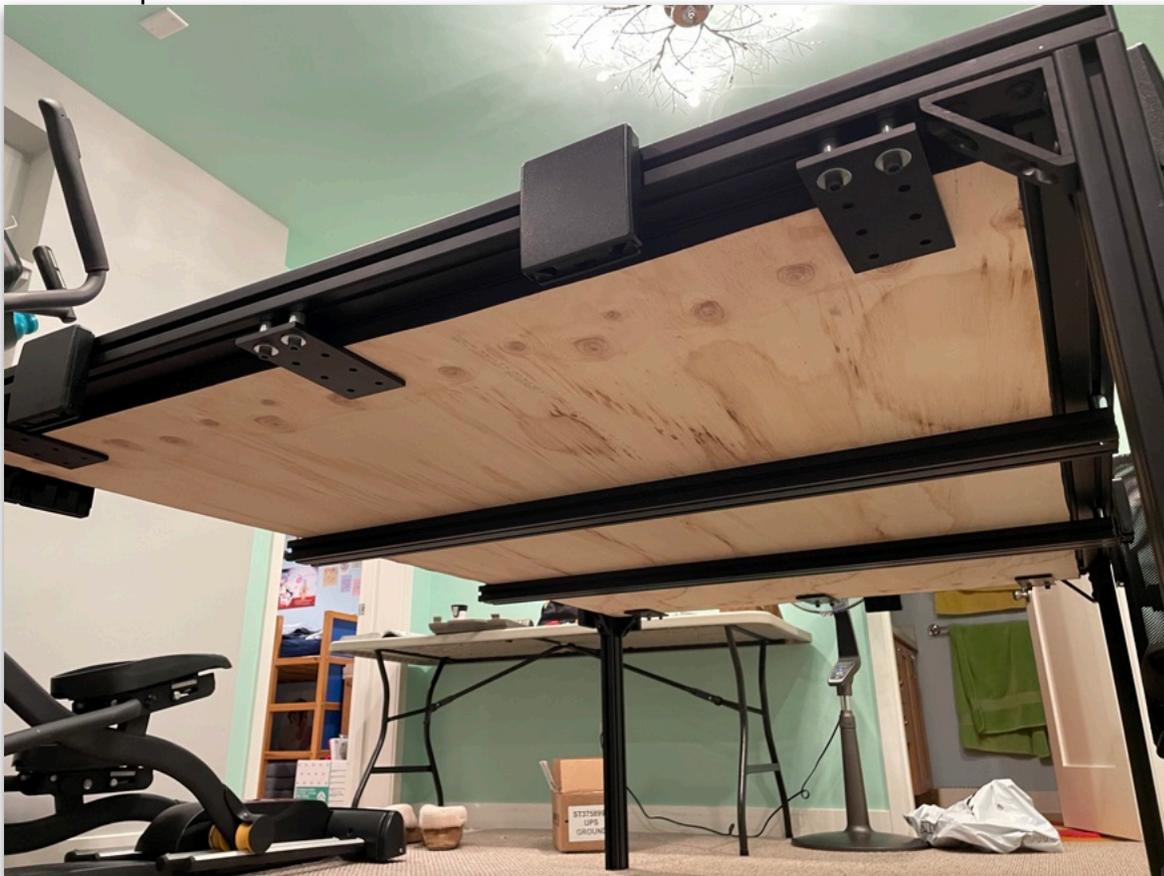
7. Final touches

☐ *(Skip this step if you're using budget aluminum.)* Before you can attach end caps to the support rails, you need to trim their push-in fasteners. Otherwise, they run into the screws. Use your utility knife to trim the tip and first rib off of eight push-in fasteners.

☐ Attach the end caps to the support rails, using your thumbs or rubber mallet to push in the trimmed fasteners.

☐ Use your utility knife to cut a 46" length of tread strip. (If you're building a different-size table, subtract 2" from the width of the plywood.) Insert it into the inside edge of one of the short frame rails, tucking it into the cut-outs in the long rails' tread strips. Repeat for the other short rail.

☐ At the end of this section, the base table is done. Grab your friends and play a game!

8. Assemble removable accessories (optional)

☐ For each accessory, decide where you'll put the roll-in panel mount brackets that will support it.

☐ Turn the accessory upside down and put the brackets in place. Using your pencil, trace the bracket's hole and draw a small plus in the center.

☐ Using your scratch awl, punch a small hole at the center of each plus. (Hold the awl in place and strike the top with the heel of your hand.) This will prevent the drill from wandering in the next step.

☐ Attach a 7/64" bit to your drill. Hold it next to the accessory and eyeball how deep the drill bit should go. Then drill a pilot hole at the center of each circle, being careful not to drill all the way through.

☐ Put the roll-in panel mount bracket back in place with a 3/16 x 1" fender washer on top. Screw it halfway into place with a #10 screw that's as long as the accessory is thick (1/2" for the small shelf, 3/4" for the other accessories in this document).

☐ Wedge another 3/16 x 1" fender washer under the edge of the panel mount bracket, the tighten the screw. This levels out the bracket. Without it, the accessory will angle down slightly.

☐ Repeat for each accessory.

You're done! Enjoy your new table!